body weight of not less than 150 pounds, because she showed no signs of kidney disturbance prior to treatment, and because definite signs of chronic hepatitis precluded the use of treparsol, in our opinion. Upon completion of the seventeenth dose this young woman became ill with a severe febrile attack accompanied by exfoliative dermatitis and albuminuria. She was confined to bed for several days. I wish to mention the size of her dosage and the vigor of her intolerance principally because within a few weeks after this attack she was found to harbor *Entameba dysenteriae* as luxuriantly as ever.

Another case at this time, a woman of fifty, weighing over 150 pounds, with evident liver damage, on a dose of 0.25 gram once daily, developed fever, albuminuria and exfoliative dermatitis at the end of the fifth day, *i. e.*, after a total dosage of only 1.25 grams of stovarsol.

Many cases of this sort occurring with and after both small and large doses of stovarsol have determined two conclusions in our minds: first, stovarsol is a highly toxic drug, not sufficiently and specifically poisonous enough for *Entameba dysenteriae*, and at the same time too poisonous for most human hosts. It is a useful drug to have in one's armamentarium if one is dealing with much chronic entamebiasis. It is debatable whether it should be on the open market, readily available for use by the inexperienced, where it is apt to be given without adequate check, such as oft-repeated urinary examination and cognizance of liver disease, and where metallic poisoning may occur unobserved.

In conclusion I wish to say that as early as eight years ago it became apparent in our work that the treatment of chronic human entamebiasis must include the application of two principles so old and trite that it is embarrassing to name them. One is the strict individualization of each case, with a definite and incisive determination of the kind and degree of tissue damage sustained in each particular case; and with this varying systemic damage in mind, the institution of a definite individualized course of treatment which will take into account the tissue peculiarities of the patient and will draw upon the whole therapeutic armamentarium for its effectiveness. We like to state these principles more briefly by saying that there is no one cure and no one treatment for infection with *Entameba dysenteriae*. At best there must be a campaign suited to the individual case. One must for therapeutic purposes draw upon the whole armamentarium which must of necessity include ipecac and its derivatives, numerous arsenicals (and not stovarsol alone), bismuth preparations of various types, quinin, yatren and iodin, kaolin, charcoal, many of the endocrine products, calcium salts, hematinics, autogenous vaccines, various types of physiotherapy, low residue protective dietaries, antispasmodics, peptone solution, and other remedies.

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R. J. Pickard, M. D. (Watts Building, San Diego). Continued experience is convincing me that nearly all carriers of intestinal protozoa, at times, and many carriers most of the time, give symptomatic evidence of their infestation. These symptoms fall into three groups: one, those referable to the alimentary tract; two, remote (toxic ?) effects on the nerves and joints; and, three, yet more remote, the physical and mental lassitude and depression.

Doctor Butka's paper is a valuable contribution of exact observation and rechecking over a long period in a group of cases in which especial interest is furnished by the statistics on the medical students. He shows the difficulty in handling these patients who are discomforted rather than ill, even when selected from a class intelligent enough to coöperate with their physician.

Doctor Butka also shows the penalty of overdosage with stovarsol, so easy to give that one is apt to forget that it is arsphenamin, oxidized, and should be administered with equal caution. Emetin, too, should be given at longer intervals than is customary, because of its effect upon the heart muscle and nerve tissue, and its slow and irregular elimination. Ravaut, to avoid these difficulties, and to prevent the building up of drug resistance by the parasite, alternates both active drugs as described in detail in "Syphilis, Paludisme Amibiase," with a bismuth-ipecac paste in the intervals. When giving intravenous treatment he does not exceed 0.30 novarsenobenzol every four days since "dysenteric patients," because of their debility, and more because of the alteration of their digestive tract and liver, cannot take arsenic as well as other patients, especially when the disease is chronic. Overdosage with stovarsol or treatment with emetin-bismuth-iodid may readily appear to the patient as worse than the original complaint. Yet laboratory experience shows that stovarsol alone, in most cases, in small-spaced dosage, over a period of a few months is almost a specific for both the amebic and flagellate infections.

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Doctor Butka (closing).—There is still considerable difference of opinion as to the adequacy of various methods of search for the protozoal parasites, but this paper demonstrates the effectiveness of the ordinary methods of search in the hands of an experienced worker.

In the eradication of the parasites it has frequently been proven that any single remedy will not be effective in all cases. Some parasites will survive the stovarsol medication and succumb to ipecac and its derivatives, while others are ipecac resistant. While failures following stovarsol medication are observed, there can be no question as to the presence of a specific effect on these parasites. The fact remains, however, as stated by Doctors Boyers and Pickard, that caution must be used in the use of stovarsol, and there must be individualization in the treatment of the intestinal protozoa.

RADIATION TREATMENT OF CERTAIN KIDNEY DISORDERS*

By Albert Soiland, M. D.
William E. Costolow, M. D.
and
Orville N. Meland, M. D.
Los Angeles

Discussion *by Frederick H. Rodenbaugh, M. D., San Francisco; W. O. Weiskotten, M. D., San Diego; Wilbur B. Parker, M. D., Los Angeles.*

THE following singular incident which occurred in the summer of 1901 called my attention to the possible value of radiation therapy in kidney disease. At that time Dr. John B. Murphy visited California in the company of a distinguished medical friend from the Middle West. The friend, en route, developed an acute renal colic accompanied by the passage of blood mixed with considerable purulent material, associated with frequent and painful micturition. Doctor Murphy, who suspected the presence of stone, brought his friend to our office for a diagnosis by means of the x-ray.

The best x-ray equipment in the city in those days consisted of the old type glass-plate static machine with all its ancient trimmings, including a vacuum tube of queer shape and uncertain habits. My recollection of this x-ray diagnostic attempt is not altogether accurate, but it is certain

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that efforts were made half a dozen times at least to get a kidney shadow impression on the photographic plate. We succeeded in visualizing more or less clearly the spine contour, but no soft tissue values. The striking result, which remained in my memory, is that the patient, very soon after beginning these x-ray diagnostic attempts, became very much better and, with each progressive exposure, improved to an astonishing degree. It is well to recall that the time necessary for an exposure of the deep parts, with a static machine, ranged from fifteen to twenty minutes each, so that a fair amount of radiation must have reached the interior of the patient's body. At all events, following these exposures to x-ray, the doctor's pain had gone, the bleeding and the tenesmus of the urinary organs had also vanished, and the patient became clinically well without any further therapeutic measures. When questioned several years later, Doctor Murphy stated that, as far as he knew, the doctor had remained well since his memorable California visit.

The direct and unmistakable relief that was thus achieved from an abortive diagnostic attempt gave encouragement to the use of radiation in other deep infections, as well as in those of the kidney and its appendices. The old records contain not a few very interesting observations along similar lines, but unfortunately no accurate clinical records were then kept.

As the science of radiation therapy gradually develops, a better understanding permits one to speak with more assurance. We know, of course, that the old static machine, because of its high voltage, actually did generate short-wave energy, and therefore delivered deep x-ray effects.

We have not seen many references to treatment of pathologic conditions of the kidney by x-ray, nor are we aware of any outstanding statistical résumé of work of this nature; but during the past twenty years we have treated with benefit a considerable number of kidney lesions with radiation therapy. Several cases of postoperative tuberculous sinus have been healed by radiation after other local therapeutic measures had failed. A number of tuberculous infections of the kidneys have been rendered clinically well, and kidney complications where mixed infection prevailed, with or without hemorrhage, have shown definite response to x-radiation. The deep x-ray should be a benefit in deep-seated tuberculous lesions; since for superficial tuberculous conditions of the skin, and for certain glandular tuberculous lesions, radiation has superseded any other type of therapy.

Every roentgenologist knows that relief from pain follows the use of the x-rays, particularly where several exposures are made, and that spasm of the ureter, even when produced by mechanical means, yields to x-ray exposures.

A number of cases of inoperable carcinoma of the kidney have been treated with deep x-ray therapy and, while we cannot report any five-year cures, a few cases under observation after two or three years have been greatly improved. Carcinoma of the kidney reacts more unfavorably to radiation than carcinoma in any other part of the body. The chief value of radiation in this condition is in checking the hemorrhage. In some of the very advanced cases the hemorrhage would cease for several months after treatment, recur, and again be checked after subsequent treatment. Radiation has been of value as a preoperative measure, checking the hemorrhage and improving the patient's general condition for subsequent operation. In all cases treated, hemorrhage was checked.

Two cases, referred by urologists for the treatment of kidney hemorrhage of undetermined origin, were under the care of Dr. Anders Peterson, and both were benefited immediately by radiation. A short résumé is given below.

CASE REPORTS

CASE 1.—I. F., female, age thirty-two. Hematuria, right kidney, cause unknown. Two months before consulting Doctor Peterson she began passing bloody urine. This would continue for a number of days, accompanied by severe pain in the right lower abdomen. Pain was relieved on passage of clots. Physical examination was negative except for a slight clubbing of the calyces. On two or three occasions, silver nitrate solution was injected into the kidney pelvis, with no improvement. A course of high voltage x-ray was given over the right kidney area with disappearance of the hematuria. The patient has now been well and free from symptoms for one year.

CASE 2.—M. G., female, age fifty-four. Hematuria, left kidney, cause unknown. For seven months the patient had had intermittent hematuria with no other symptoms. Cystoscopic examination showed the blood coming from the left ureter. Pyelograms revealed no pathological condition. Local treatment was begun by irrigating the pelvis with silver nitrate solution, without result. X-radiation administered over the left kidney stopped the hemorrhage. She is now apparently well and has been free from symptoms for eight months.

Radiation probably offers more in the treatment of hypernephroma than any other method. This type of growth metastasizes so rapidly and is usually recognized too late for surgery to be of much value. The kidney lesion in these cases usually melts rapidly under radiation therapy, although the glandular metastases are more resistant. Out of seven cases treated two are still alive; one having passed the five-year period without recurrence. Two cases lived over two years following treatment. The patients who died succumbed to lung metastasis; of these, two had liver metastasis, and one had bone metastasis.

In all cases there was improvement following radiation. The histories of some of the cases are given below, one of whom passed the five-year period.

CASE 1.—W. R., male, age thirty-one. Hypernephroma. Well at the end of five and one-half years. Referred by Dr. J. Walter Reeves, Los Angeles, September 23, 1922. Patient had been having some pain in the left kidney region for two or three months before he consulted his physician. Shortly before this he had noticed hematuria. On examination there was a large mass in the left kidney region. On September 13, 1922, an exploratory operation was done and a section taken from the mass showed hypernephroma. Since the mass was entirely inoperable, the wound was closed without further surgery. On September 23 a series of deep x-ray therapy treatments

were commenced and completed October 12. The tumor gradually disappeared, and in two months it was impalpable. Repeated examinations since that time have failed to reveal any sign of the growth. It is now five and one-half years since the treatment, and the patient is perfectly well, works every day, and weighs about 180 pounds. Recently he was given a thorough examination at the Mayo Clinic, the results of which were negative. The intravenous phthalein test of the kidney function showed a 65 per cent return of the dye. X-ray examination of the kidneys, ureters, and bladder area was negative, as was the x-ray of the chest.

CASE 2.—J. H., male, age forty-five. Hypernephroma, right kidney. Given postoperative treatment. Well at end of four years. Referred by Dr. Franklin Farman, Los Angeles. Patient complained of hematuria and pain in right kidney region. Examination showed a tumor mass in right lumbar region. Four weeks before he was sent in for radiation the nephrectomy for hypernephroma was done. The mass was apparently entirely removed and no metastases were found. Six hours of high voltage x-ray was given over the kidney region, and when the patient was last seen by Doctor Farman he was perfectly well, with no evidence of recurrence.

CASE 3.—L. W., male, age forty-four. Carcinoma, left kidney. Good health for one and one-half years.

Referred by Dr. Anders Peterson, Los Angeles, in 1926. For nine months the patient had been passing blood in the urine; there was no pain. Examination showed a palpable mass in the left side of abdomen, reaching ten centimeters below rib margin. It was apparently adherent to all the surrounding structures. Pyelogram shows an irregular pelvis, as seen in new growth. Given three courses of x-ray treatment. Mass has decreased to one-half its original size. It is still palpable but freely movable. He has an occasional trace of blood, but is attending to his business as usual. He was inoperable at the time he first appeared, so that although he is not cured he has been greatly relieved and his life has been prolonged.*

These are a few instances where radiation has been of immense benefit to patients suffering from renal disorders who have shown no improvement under orthodox methods of treatment. Although the treatment may not be curative, the patient should be offered the choice of radiation when doubt exists as to treatment.

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DISCUSSION

FREDERICK H. RODENBAUGH, M. D. (321 Medico-Dental Building, San Francisco).—Doctor Soiland's presentation of a group of cases extending over twenty years, is unique in a study of the therapeutic effects of radiotherapy on neoplastic tissues of the hypernephroma group.

The hopeless prognosis of the average hypernephroma cases that usually arrive too late for surgical therapy, and are considered problems concerned with palliative treatment rather than curative, stimulates a search for any agent to relieve these unfortunate patients.

In this group, relief of pain and hemorrhage and the occasional permanent result, here, as in other fields of radiation therapy, encourage the use of this benign agent, that, used as a last resort, has produced such satisfactory results that it has found a permanent place in medical therapy.

Our personal experience in temporary relief of local symptoms has been similar to Doctor Soiland's, but we have no brilliant records of hypernephroma patients free from symptoms for such a long period. Our longest case free from symptoms, is nine years—a patient with local recurrences in the abdomen, well at this time.

This presentation is of unusual value and should stimulate further work in the hope of relieving the present hopeless prognosis in this group of neoplasms.

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W. O. WEISKOTTEN, M. D. (603 Medico-Dental Building, San Diego).—Doctor Soiland and his associates have presented a most interesting report of a series of cases with truly encouraging results. Many of us can recall patients who have been referred for roentgen examination with a rather indefinite history of hematuria and of indefinite pain referred to some portion of the urinary tract, in which the x-ray examination gave no evidence which would explain the clinical findings. Possibly many of these patients would be benefited by radiation therapy. An early diagnosis of kidney neoplasm is not always possible, but the patient should be given the benefit of the doubt and treatment should be instituted with the hope of rendering the patient symptom-free. In those patients who have progressed to the stage of palpable mass in the kidney area and in whom surgery is not indicated, radiation therapy offers probably the best hope toward the amelioration of symptoms.

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WILBUR B. PARKER, M. D. (527 West Seventh Street, Los Angeles).—The exemplary article of Dr. Albert Soiland and associates is difficult of discussion in reference to the true title "Radiation Treatment of Certain Kidney Disorders with Special Reference to Hypernephroma."

Crediting Doctor Soiland with being a pioneer in deep therapy, whose contributions have withstood all criticism in reference to dosage, application and results, it is believed this paper should not include multiple incomplete case reports, tuberculosis in varied progression, and an opinion "that spasms of the ureter when produced by mechanical means (unexplained) yield to x-ray exposures." I shall limit my discussion to hypernephroma.

For cure of hypernephroma or any other malignant conditions of the kidney, radiation therapy and surgery are of doubtful value, unless a diagnosis is made before glandular metastasis has occurred. The alleviation of hematuria and attendant symptoms by the use of radiation in advanced inoperable cases is well established. In either event scientific radiation therapy, both preoperative and postoperative, is indicated. The statistics of such therapy are of dubious value, due to inability of early diagnosis and to a lack of coöperation between the profession at large and the competent roentgenologist.

When the specialist and general practitioner cease to dictate dosage to the radiologist, and competent radiologists are responsible for proper administration, we will emerge from the present maze to a field of more open vision.

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DOCTOR MELAND (closing).—The literature contains very little that is definite with reference to the treatment of kidney disorders by means of radiation. Because of this lack, this paper is presented. Though such a disease as hypernephroma is looked upon as a more or less hopeless condition, the fact that symptoms may be relieved and that there may be an apparent arrest and disappearance of the growth is sufficient evidence of its efficacy. To insure the patient the best results, it is not sufficient to rely on one course of treatment. Insist that he report frequently for subsequent therapy and observation.

Patients with hematuria of unknown etiology, apparently not responding to the regular methods of treatment, should be given relief through radiation before submitting to surgery.

* This patient died five months after the presentation of this paper. Autopsy revealed that he died of general carcinomatosis secondary to a carcinoma of the kidney.